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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/517,868	12/16/2004	Daniel Decroupet	339555US99PCT	2902
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OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, L.L.P. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER MCDONALD, RODNEY GLENN	
			ART UNIT	PAPER NUMBER
			1795	
			NOTIFICATION DATE	DELIVERY MODE
			02/19/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/517,868

Applicant(s)

DECROUPET ET AL.

Examiner

Rodney G. McDonald

Art Unit

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 February 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 4, 5, 12, 19-22, 24-29, 33, 35-40, 49-61 and 63 is/are pending in the application.
- 4a) Of the above claim(s) 22, 24-29, 33 and 35-40 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 4, 5, 12, 19-21, 49-61 and 63 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-940)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 12/18/09, 2/3/10
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on February 3, 2010 has been entered.

Election/Restrictions

This application contains claims 22, 24-29, 33, 35-40 drawn to an invention nonelected with traverse in the reply filed on November 16, 2007. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 4, 5, 12, 19, 21 and 49-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stachowiak (US PGPUB 2003/0170466 A1) in view of Lingle (U.S. Pat. 6,445,503).

Regarding claim 1, Stachowiak teaches a method for the production of a glazing provided with a multilayer coating, the multilayer coating being deposited on a glass substrate by sputtering. (See Fig. 2; Paragraph 0026-0043, 0045, 0046) A first transparent dielectric layer is deposited on the substrate followed by the deposit of a functional layer of a Ag-based infrared reflective material. (Paragraph 0026-0043) Deposited on the Ag based functional layer is a first protective layer with a geometric thickness of 3 nm at maximum and composed of a material, of which the electronegativity different from oxygen is less than 1.9 and of which the electronegativity value is less than that of the infrared reflective material. (Paragraph 0031, 0036, First Table - 16 Angstroms (i.e. 1.6 nm)) A second protective layer "directly on" the first protective layer with a geometric thickness of 7 nm at a maximum and composed of a material of which the electronegativity different from oxygen is greater than 1.4, and that

at least a second transparent dielectric layer is then deposited. (Paragraph 0032, 0033, 0037, 0038, 0045)

Regarding claim 4, Stachowiak teaches the first protective layer can be NiCrOx which has an electronegativity value at least 0.05 less than that of the infrared reflective material. (Paragraph 0031, 0036, 0041)

Regarding claim 5, Stachowiak teaches that the material of the second protective layer (i.e. TiOx) has a lower electronegativity value than the electronegativity value of the material of the first protective layer (i.e. NiCrOx). (Paragraph 0031, 0032, 0036, 0037)

Regarding claim 12, Stachowiak teaches that the second protective layer is deposited in a thickness in the range of either 10-500 Angstroms or 10-900 Angstroms. (Paragraph 0045)

Regarding claim 19, Stachowiak teaches that at least two functional layers based on an infrared reflective material are deposited, each followed by the deposit of first and second protective layers, and in that at least one intermediate dielectric layer is deposited between the functional layers. (Paragraphs 0027-0040)

Regarding claim 21, Stachowiak teaches toughening through heat treatment. (Paragraph 0042)

Regarding claim 49, Stachowiak teaches the first protective layer can be NiCrOx which has an electronegativity difference from oxygen is less than 1.8. (Paragraph 0031, 0036, 0041)

Regarding claim 50, Stachowiak teaches the first protective layer can be NiCrOx which has an electronegativity difference from oxygen is less than 1.7. (Paragraph 0031, 0036, 0041)

Regarding claim 51, Stachowiak teaches the second protective layer (i.e. TiOx) can be composed of a material of which the electronegativity difference from oxygen is greater than 1.6. (Paragraph 0032, 0037)

Regarding claim 52, Stachowiak teaches the second protective layer (i.e. TiOx) can be composed of a material of which the electronegativity difference from oxygen is greater than 1.8. (Paragraph 0032, 0037)

Regarding claim 53, Stachowiak teaches that the material of the second protective layer (i.e. TiOx) has an electronegativity value at least 0.1 less than the electronegativity value of the material of the first protective layer (i.e. NiCrOx). (Paragraph 0031, 0032, 0036, 0037)

Regarding claim 54, Stachowiak teaches that the material of the second protective layer (i.e. TiOx) has an electronegativity value at least 0.2, less than the electronegativity value of the material of the first protective layer (i.e. NiCrOx). (Paragraph 0031, 0032, 0036, 0037)

Regarding claim 55, Stachowiak teaches that the first protective layer is NiCr-based. (Paragraph 0041)

Regarding claims 59, 60, 61, Stachowiak teaches that the first protective layer can be deposited at 1.6 nm. (See First Table)

The difference between Stachowiak and the present claims is that depositing the first protective layer in an atmosphere containing 20% oxygen at a maximum is not discussed (Claim 1), depositing the second protective layer in an atmosphere containing 20% oxygen at a maximum is not discussed (Claim 1), utilizing an 80/20 alloy is not discussed (Claim 56), the material of the second protective layer being selected from titanium, aluminum or tantalum is not discussed (Claim 57), and the material of the second protective layer being titanium is not discussed (Claim 58).

Regarding depositing the first protective layer in an atmosphere containing 20% oxygen (Claim 1), Lingle suggest depositing NiCrO in an atmosphere containing 20% oxygen at a maximum. (See Table III)

Regarding depositing the second protective layer in an atmosphere containing 20% oxygen at a maximum (Claim 1), Lingle teaches depositing TiOx in an atmosphere containing 20% oxygen at a maximum. (See Table III)

Regarding claim 56, Lingle teaches utilizing an 80/20 alloy of NiCr. (Column 10 lines 9-14)

Regarding claim 57, Lingle teaches utilizing TiOx where $x < 2.0$. Here the examiner interprets less than 2.0 to include 0. (See Table II)

Regarding claim 58, Lingle teaches utilizing TiOx where $x < 2.0$. Here the examiner interprets less than 2.0 to include 0. (See Table III)

The motivation for utilizing the features of Lingle is that it allows for depositing durable heat treatable layers. (See Abstract)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Stachowiak by utilizing the features of Lingle is that it allows for depositing heat treatable layers.

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stachowiak in view of Lingle as applied to claims 1, 4, 5, 12, 19, 21 and 49-61 above, and further in view of Szczyrkowski et al. (U.S. Pat. 5,279,722).

The difference between Lingle and the present claims is that a titanium based protective layer deposited to terminate the multilayer coating is not discussed (claim 20).

Regarding claim 20, Szczyrkowski et al. suggest terminating a coating stack with a titanium based protective layer. (See Abstract)

The motivation for utilizing the features of Szczyrkowski et al. because it allows for producing panes with high reflectivity. (See Abstract)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized the features of Szczyrkowski et al. because it allows for producing panes with high reflectivity.

Claim 63 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stachowiak in view of Lingle as applied to claims 1, 4, 5, 12, 19, 21 and 49-61 above, and further in view of Farmer et al. (U.S. Pat. 4,973,511).

The difference not yet discussed is the second protective layer being deposited in an atmosphere containing a maximum of 10% oxygen (Claim 63).

Regarding claim 63, Farmer et al. teach depositing a first protective layer in an atmosphere containing a maximum of 10% oxygen. (i.e. 1 sccm for 31 total sccm of gas) (Column 13 lines 21-30)

The motivation for utilizing a low amount of oxygen during reactive sputtering is that it prevents damaging the silver layer by oxidation. (Column 13 lines 25-26)
Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized the features of Farmer et al. because it allows for preventing damaging of the silver layer by oxidation.

Response to Arguments

Applicant's arguments filed February 3, 2010 have been fully considered but they are not persuasive.

In response to the argument that Stachowiak teach examples well outside of the claimed maximum of 7 nm, it is argued that Stachowiak teach that the range of thickness can range from 10 to 900 Angstroms. The lower end of the range is within Applicant's claimed range. Therefore the thicknesses are obvious. (See Stachowiak discussed above)

In response to the argument that Stachowiak does not teach the TiOx layer being a protective layer, it is argued that since the TiOx layer is the same composition, falls within the same required thickness as claimed and is directly above the first protective layer of NiCrOx the same as Applicant then the TiOx layer is protective. (See Stachowiak discussed above)

In response to the argument that Stachowiak does not teach the layered structure to be heat treatable, it is argued that Stachowiak teach heat treating to control the sheet resistance of the layered structures in Figs. 1-17. Therefore Stachowiak teach heat treating. (See Stachowiak Paragraph 0042)

In response to the argument that Lingle is not applicable because in Lingle the TiOx layers are below and in contact with the silver layer rather than above the first protective layer, it is argued that in Lingle the TiOx layer (f) is above the first protective layer NiCrOx (d). Stachowiak teach the TiOx layer in contact with the first protective layer of NiCrOx. (See Lingle and Stachowiak discussed above)

In response to the argument that Lingle teaches only a single protective layer above the silver layer and not two protective layers as claimed, it is argued that the Stachowiak teach provided two protective layers as discussed above. (See Stachowiak discussed above)

In response to the argument that Lingle does not disclose forming a TiOx layer in a low oxygen atmosphere directly on the first protective layer, it is argued that Lingle teach the conditions for sputtering TiOx where $x = <2$ and one of ordinary skill in the art would look at these conditions when sputtering TiOx in the reference of Stachowiak. (See Lingle and Stachowiak discussed above)

In response to the argument that Lingle teach that the layer directly above the NiCrOx layer is formed in 50% oxygen, contrary to less than 20% oxygen for forming the second protective layer as claimed, it is argued that in Lingle the layer directly above the NiCrOx layer is SnOx. The Examiner is relying on the conditions in Lingle to deposit

TiOx. Lingle teach the conditions for sputtering TiOx layer where $x = <2$ and one of ordinary skill in the art would look at these conditions when sputtering TiOx layer in the reference of Stachowiak. (See Lingle and Stachowiak discussed above)

In response to the argument that there is no motivation for one of ordinary skill in the art to deposit two protective layers in a low oxygen atmosphere above a silver layer, it is argued that Stachowiak teach depositing two protective layers over the silver layer and that Lingle suggest the conditions for sputtering where a low oxygen atmosphere is used in order to deposit a layer of TiOx layer where $x = <2$. The motivation for utilizing a low oxygen atmosphere is that it allows deposition of a TiOx layer where $x = <2$. (See Stachowiak and Lingle discussed above)

In response to the argument that one of ordinary skill in the art would not expect that moving the Lingle TiOx layer to entirely different position in the coating stack would make the Stachowiak coating heat treatable, it is argued that Lingle teach that their coating layers provide a structure which is heat treatable and therefore one of ordinary skill in the art would look to the layers of Lingle to form structures that are heat treatable. (See Lingle discussed above)

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney G. McDonald whose telephone number is 571-272-1340. The examiner can normally be reached on M-Th with every Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X. Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Rodney G. McDonald/
Primary Examiner, Art Unit 1795

Rodney G. McDonald
Primary Examiner
Art Unit 1795

RM
February 9, 2010